

This invention relates to an improvement in hollow or tubular trays and more particularly to a tray of the type which is capable of being folded to a flat collapsed condition for storage and shipment purposes, and which may be readily  
 5 set up at the time a package is to be produced; the tray of the present invention is particularly adaptable for the purpose of being set up and forming a frame about an item to be packaged.

Primary objects of the present invention are to  
 10 provide a novel tray having a hollow or tubular frame for surrounding an item and forming a package by means of a shrink film overwrap or the like; to provide a tray which can be loaded or have a product deposited thereon while the carton is still in a folded or collapsed form; to provide a tray  
 15 which is simple and readily set up; to provide a tray which is of a one-piece construction and formed from a substantially rectangular blank which keeps waste of stock material at a minimum; and provide a tray which is satisfactory and practical for the purpose intended.

20 These together with other and more specific objects will become apparent from a consideration of the following description taken in conjunction with the drawing forming a part thereof, wherein:

Fig. 1 is a perspective view of the novel tray  
 25 showing a fragmentary portion of one corner covered by means of a transparent overwrap of shrink film or the like;

Fig. 2 is a plan view of the blank from which the novel tray is produced;

Fig. 3 is a plan view of the assembled tray in a  
 30 flat or collapsed condition;



Fig. 4 is an enlarged section taken substantially on the plane of line 4-4 of Fig. 3;

Fig. 5 is an enlarged section taken substantially on the plane of line 5-5 of Fig. 1;

5 Fig. 6 is an enlarged fragmentary perspective view showing the upper right-hand corner of the novel tray in a partially erected condition;

Fig. 7 is an enlarged fragmentary perspective view similar to Fig. 6 and showing the relative position of the  
10 parts during an intermediate stage of erection;

Fig. 8 is an enlarged fragmentary perspective view similar to Figs. 6 and 7 showing the finally erected upper right-hand corner of the novel tray; and

15 Figs. 9 and 10 respectively indicate differently appearing frames attained by varying dimensions of the panel elements of the different panel element arrays.

Referring to the drawings in detail, and first considering Fig. 2, the improved tray is produced from a blank 10 of a suitable paperboard material or the like which  
20 is cut and scored as will presently be described in detail. The blank 10 comprises a rectangular bottom panel 12 (square in the exemplary embodiment) which is bordered at opposed pairs of parallel hinge or score lines 14, 16 and 18, 20 by tubular wall-panel element arrays 22, 24 and 26, 28,  
25 respectively.

The wall panel element arrays 22 and 24 are identical in this preferred embodiment and thus only one of these arrays will be described in detail, the other of which being identified by similar primed reference numerals. The wall panel element array 22 comprises an inner wall panel element 30 having free edges 32 and 34 colinear with fold lines 20 and 18, respectively. The panel element 30 is formed by a fold line 36 parallel to fold line 14 and terminating at the free ends or edges 32 and 34 of the panel element 30. A top wall panel element 38 is hingedly connected to the fold line 36 and has formed in the outer ends thereof lock tabs 40 and 42 which include converging angular margins 44 and 46, respectively, projecting below the fold line 36 and inwardly at 48 and 50 to form tab portions flanking the free margins 32 and 34 of the panel element 30. The tab portions 40 and 42 form at the opposite ends of the panel element 30, i.e. at the free margins 32 and 34 retaining slots 54 and 56, the function of which is to subsequently be described in detail.

An outer wall panel element 58 is hingedly connected on a fold line 60 to the top wall panel element 38 and includes free side margins 62 and 64 generally terminating in alignment with the free outer margins of the tabs 40 and 42 and hingedly connected on a fold line 66 is a combined bottom wall panel element and glue flap 68 which will have adhesive applied to the portion 70 thereof, i.e. on the surface opposite that shown in Fig. 2 and adjacent the margin 71.

Wall panel element arrays 26 and 28 are substantially identical, however, the width of the top wall panels and the walls formed from the panel elements is wider than the corresponding hollow wall formed from the array of wall panel

elements 28 (see Figs. 1 and 5, for example); this extra width lending to the incorporation of special art works, etc. as will subsequently be described.

The wall panel element array 26 comprises an inner wall panel element 72 hingedly connected at fold line 18 and defined at the outer edge by a fold line 74 parallel to the fold line 18. Formed at opposite ends of the inner wall panel 72 by means of a substantially U-shaped cut are opposed lock tabs 76 and 78, the function of which will be described with respect to the erected carton. Hingedly connected on a fold line 79 disposed parallel to the fold lines 74 and 18 is a top wall panel element 80 and an outer side wall panel element 82. Hingedly connected to panel element 82 on a fold line 84 parallel to the previously mentioned fold lines 18, 74 and 79 is a bottom wall panel and glue flap element 86 which includes a portion 88 which will receive adhesive on the surface opposite that shown for securement to the bottom panel 12 when the blank is assembled for subsequent erection.

It will be noted that the panel elements 80, 82 and 86 are substantially the same length, however, the only requirement with respect to length is that the panel elements 80, 82 and 86 terminate intermediately of the top wall panel elements 38, 38' of the panel element arrays 22 and 24, respectively.

The panel element array 28 includes an inner wall panel element 72' hingedly connected at fold line 20 and having at opposite ends thereof lock tabs 76' and 78', respectively. It will be noted that the panel elements 30, 30' and 72 and 72' are of the same width and this determines the height of the erected tray. Hingedly connected on a fold line 74' is a top panel element 80' which, it will be noted, is of substantially

greater width than the corresponding top panel element 80 of the panel element array 26. An outer side panel element 82' is connected to the panel element 80 on a fold line 79' which is parallel to fold lines 20 and 74'. A bottom panel element 86' is hingedly connected to the panel element 82' on a fold line 84', and the panel element 86 in addition to being substantially the width of the panel element 80' and wider than the corresponding panel element 86 of the panel element array 26, includes a portion 88' which will receive adhesive thereon and function in the manner previously described with respect to the panel portion 88 of the array 26.

In the exemplary embodiment, the panel element 80' has formed thereon by a suitable art work a figure 90, and a portion 92 thereof is formed by a cut line 94 which extends partially into the panel element 72'. As seen in Figs. 1 and 5, for example, the figure 90 on the panel element 80' will include the portion 92 which partially extends over the bottom panel 12 or the product-receiving compartment of the erected and assembled tray which can be utilized to and in retaining the product in the compartment before an overwrap is applied.

#### ASSEMBLY OF THE BLANK

The single blank will be folded on fold lines 78, 78' initially with portions 88, 88' having glue applied thereto and folded and secured beneath the bottom panel 12, and thereafter the panel element arrays 22 and 24 are folded on fold lines 60, 60' with the portions 70, 70' being secured in overlying relationship with respect to the terminal ends of glue flap portions 88, 88' of the panel element arrays 26 and

28. When this has been accomplished, as seen in Figs. 3 and 4, panel 12 will be in the same plane as panel elements 72, 80 and 72', 80'. Additionally, panel elements 30, 38, and 30', 38' will also be in the plane of the bottom panel 12.

5 The bottom panel 12 may have formed therein a cut or slot S for receiving therein, as is conventional, a portion of the goods being packaged, and the goods being packaged may be initially positioned on the panel 12 and subsequently the tray will be erected about the goods in a manner to be presently described.

#### ERECTION OF THE TRAY

15 The panels 72, 82 and 72', 82' will be oriented into vertically extending, parallel relationship relative to each other and substantially normal to bottom panel 12, top panel 80 and bottom panel 86, top panel 80' and bottom panel 86', respectively, see Fig. 5, for example. When the array of panel elements 26, 28 are oriented in the manner just described, the tab elements 76, 78 and 76' and 78' will be disposed vertically with the upper edges of these tabs in substantial alignment with the retaining slots 54, 56 and 54', 56'.

20 The panels 30, 58 and 30', 58' are now oriented into mutually parallel relationship normal to the adjacent top and bottom panel elements of the respective panel element arrays 22 and 24 (see for example Fig. 6).

25 Now referring to Fig. 7, the tab 40 enters beneath the panel element 80 and behind the inner wall panel element 72 the tab 76 will move inwardly behind the vertical plane of the inner wall panel element 30 in the groove or slot 54 forming the inner margin of the tab 40 substantially at the fold line 74 (see Figs. 1, 5 and 8).

30 The now erected tray which has been erected about

the goods to be packaged or into which the goods may now be deposited, will be wrapped by means of a transparent wrapper T in the manner shown in Fig. 1, for example, or may have elastic bands, string or a non-transparent wrapper formed thereabout.

It will be noted that panel 80' in the erected tray is wider than corresponding panel 80, this being done in the exemplary embodiment to facilitate the formation of the figure 90.

As clearly apparent in this exemplary embodiment, the width of the top and bottom panels may be varied. Although not shown, by varying the dimensions of panels 80, 80' and 38, 38' it is possible to form trays having a frame which includes tubular side walls having a cross section forming a parallelogram or isosceles trapezoid, for example (see Figs. 9 and 10, for example) and trays 100 and 200, respectively.

Obviously, many modifications may be made without departing from the basic scope of the present invention, and therefore, within the scope of the appended claims the invention may be practiced other than has been specifically described.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A folded flat, hollow-walled display tray comprising a rectangular bottom panel bordered by opposed pairs of parallel wall panel element arrays respectively connected at opposed pairs of parallel hinge lines forming the periphery of said rectangular bottom panel; each wall panel element array comprising from said hinge lines bordering said bottom panel and extending outwardly therefrom an inner wall panel element, a top wall panel element, and outer wall panel element, a glue flap connecting said inner, top and outer panel elements to said bottom panel; said inner and top wall panel elements of each of said arrays being disposed in coplanar relation with respect to each other and overlying and juxtaposed on said outer wall panel elements, said inner wall panel elements of one pair of opposed wall panel element arrays including at terminal ends thereof terminal lock tabs projecting beyond adjacent free marginal ends of and extending the width of the other pair of inner wall panel elements of said other pair of opposed wall panel element arrays, the top wall panel elements of said other wall panel element arrays including free lock tabs projecting beyond the free terminal ends of the inner wall panel elements to which said top panel elements are hingedly connected, said lock tabs on the ends of said inner wall panel elements and said top wall panel elements being disposed in confronting and substantially linear relationship, said glue flap being connected to one surface of said tray bottom panel.

2. A folded flat, hollow-walled tray as set forth in claim 1 in which an adjacent top panel and inner wall panel element of one of said arrays includes a figure formed therefrom, said figures being integral and coplanar with said top panel and extending beyond the



hinge line foldably connecting the same to the adjacent inner wall panel element whereby said figure projects partially over said tray bottom panel and coplanar with said top panel when the tray is erected.

3. The folded flat tray as claimed in claim 2 in which said top wall panel including said figure is of a greater width than the corresponding top panel of the opposed wall panel element array.

4. A blank for producing a foldable, hollow walled display tray consisting of a rectangular bottom wall including marginal fold lines extending about the periphery thereof, two pairs of arrays of wall panel elements connected to opposed parallel margins of said bottom wall panel, said array comprising an inner wall panel, top wall panel, rear wall panel, and glue flap element all connected on mutually parallel fold lines, said inner wall panel elements of said one pair of wall panel element arrays including a free marginal edge extending the entire width and colinear with one of said mutually parallel fold lines of said other array, the top wall panel elements of said first-mentioned pair of wall panel elements arrays including lock tabs flanking the free marginal edges of said inner wall panel elements of said first-mentioned pair of wall panel element arrays, said other pair of wall panel element arrays comprising an inner wall panel, top wall panel, rear wall panel and combined bottom wall panel and glue flap element, the inner wall panel elements of said second arrays including free terminal tab portions formed from U-shaped cut portions and immediately flanking the free marginal terminal ends of said first-mentioned inner wall panel elements, said lock tabs and lock tab portions of said top wall panel elements of said first-mentioned pair of wall panel element arrays and said second-mentioned pair of wall panel element arrays,

respectively, being disposed in confronting and substantially linear relationship.

5. In a blank as claimed in claim 4 in which the top wall panel element of one of said arrays and the adjacent inner wall panel element thereof include a figure integral and coplanar with said last mentioned top wall panel element and extending through the hinge line connecting said last mentioned top wall panel element to the adjacent inner wall panel element.

Fig. 1

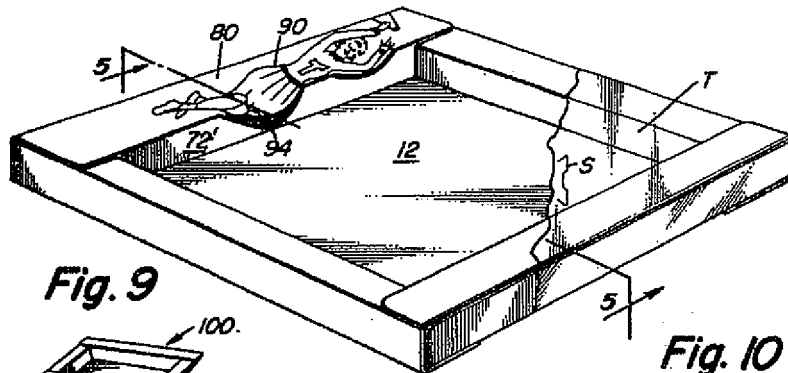


Fig. 9

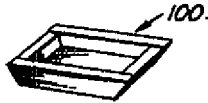
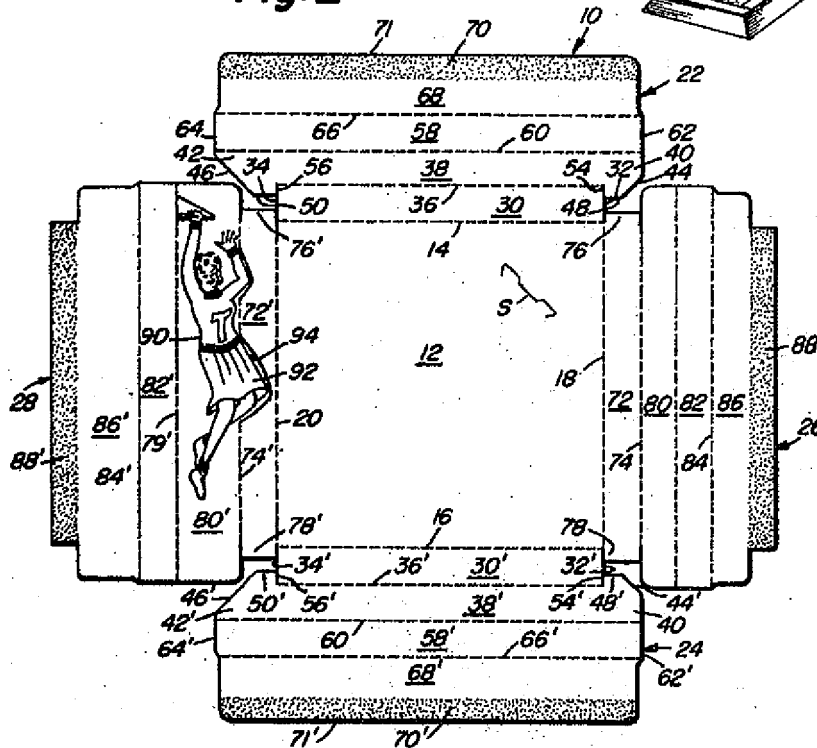


Fig. 10



Fig. 2



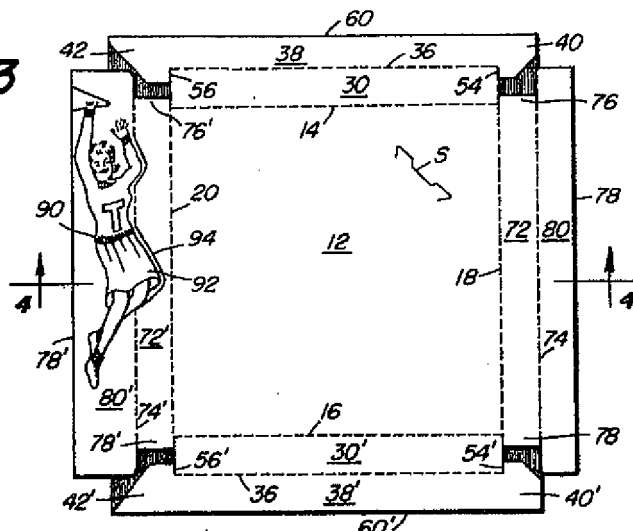
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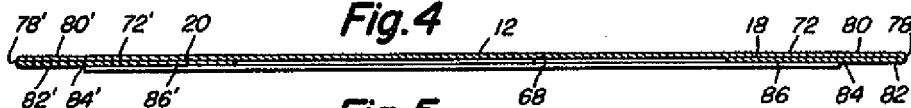
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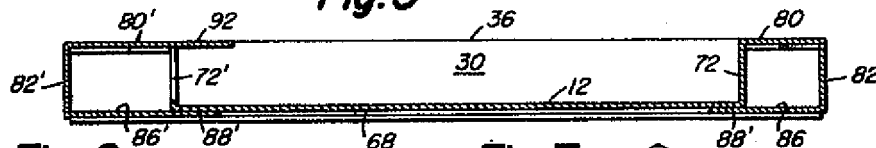
**Fig. 3**



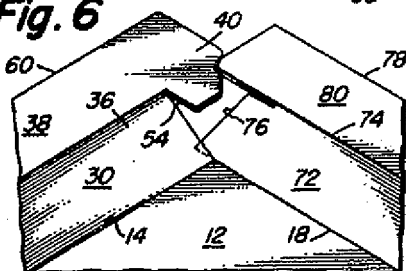
**Fig. 4**



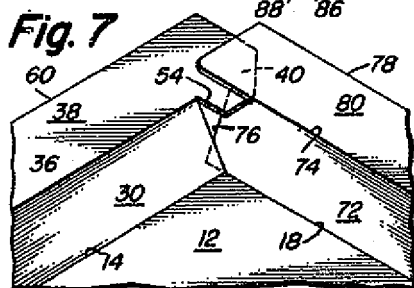
**Fig. 5**



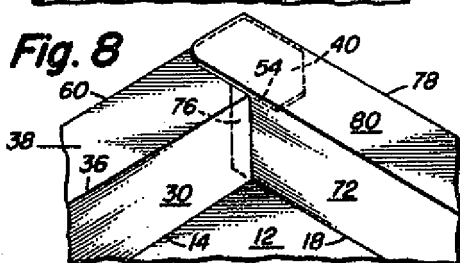
**Fig. 6**



**Fig. 7**



**Fig. 8**



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